I CLAIM:

1. A method of optimizing the transmission of a plurality of data packets across a data network at a network traffic device, each of the plurality of packets having a next-hop address, the method comprising:

receiving the data packets at the network traffic device;

buffering the data packets;

identifying a first data packet;

identifying a second data packet with the same next-hop address as the first data packet;

consolidating the first data packet with the second data packet to form a consolidated packet; and

transmitting the consolidated data packet.

2. The method of claim 1, further comprising deconsolidating any consolidated data packets received before buffering the data packets.

3. The method of claim 2, each data packet having an actual length and including a header with a field giving a total length value for the data packet, wherein deconsolidating any consolidated data packets includes extracting the total length value from the header, comparing the total length value to the actual length, and if the actual length is longer than the total length value, removing a segment from the front of the data packet equal in length to the total length value, and then buffering the segment.

4. The method of claim 3, wherein the extracting, comparing and removing steps are performed repeatedly until the actual length is equal to the total length value.

5. The method of claim 1, wherein receiving the data packets includes checking whether the next-hop address for each data packet is a local next-hop address, and forwarding packets with the local next-hop address to the local next-hop address without consolidation.

6. The method of claim 1, each data packet having a final destination address, wherein buffering the data packets includes sorting the packets by final destination address for storage in a plurality of buffers.

7. The method of claim 1, wherein buffering the data packets includes sorting the data packets by next-hop address for storage in a plurality of buffers.

8. The method of claim 1, wherein selected data packets have a priority flag, and wherein buffering the data packets includes sorting the data packets by presence of the priority flag.

9. The method of claim 1, wherein identifying a first data packet includes identifying a first data patent by next-hop address.

10. The method of claim 1, each data packet having an actual length, wherein identifying a first data packet includes comparing the actual length of the data packet to a maximum transmission length.

11. The method of claim 10, wherein identifying a second data packet with the same next-hop address as the first data packet includes checking the actual length of the second data packet and adding the actual length of the second data packet to the actual length of the first data packet to find a total length, comparing the total length to the maximum transmission length, and not consolidating the first data packet and the second data packet if the total length is equal to or greater than the maximum transmission length.

12. The method of claim 1, wherein the network traffic device is one of a router, bridge and switch.

13. The method of claim 1, each of the data packets having opposing ends, wherein consolidating the first data packet with the second data packet to form a consolidated packet includes joining the first data packet and the second data packet in an end-to-end manner.

14. The method of claim 1, wherein the plurality of data packets is a plurality of voice data packets.

15. The method of claim 14, further comprising generating the plurality of voice data packets and tagging each of the voice data packets with a tag identifying the data packet as a voice data packet at a gateway, and then sending the voice data packets over the network from the gateway.

16. The method of claim 15, wherein buffering the data packets includes storing data packets with the tag in separate buffers from data packets without the tag.

17. The method of 15, wherein identifying the selected data packet includes identifying the first data packet by presence of the tag.

18. A method of transmitting a plurality of voice data packets across a network, each of the plurality of voice data packets having a next-hop address and including a tag identifying the packet as a voice data packet, the method comprising:

receiving data packets at a network traffic device, the data packets including plural voice data packets and plural non-voice data packets;

buffering each of the received data packets;

checking a first data packet for the tag;

if the first data packet has the tag, then identifying a second data packet with the tag and with the same next-hop address as the first data packet;

consolidating the first data packet with the second data packet to form a consolidated packet; and

transmitting the consolidated packet.

19. The method of claim 18, wherein the step of checking a selected data packet for the tag is performed before the step of buffering the selected data packet.

20. The method of claim 19, wherein buffering each of the received data packets includes buffering data packets with the tag separately from data packets without the tag.

21. A method of optimizing transmission of a plurality of data packets across a data network at a network traffic device, the network traffic device having a buffer, each of the plurality of data packets being stored in the buffer and having a next-hop address, the method comprising:

selecting a first data packet from the plurality of stored packets;

determining the next-hop address for the first data packet;

checking the size of the first data packet;

comparing the size of the first data packet to a predetermined maximum transmission unit;

if the size of the first data packet is smaller than the maximum transmission unit, then identifying a second data packet from the plurality of stored data packets with the same next-hop address as the selected data packet;

checking the size of first data packet;

adding the size of the first data packet and the second data packet to find a total size;

comparing the total size to the maximum transmission unit;

if the total size is less than or equal to the maximum transmission unit, consolidating the selected data packet and the second data packet to form a consolidated packet; and

transmitting the consolidated packet.

22. The method of claim 21, wherein selecting a data packet from the plurality of buffered data packets includes checking for an indicator contained within the data packet indicating that the data packet is to be consolidated.

23. The method of claim 22, wherein the indicator is a tag indicating the type of data contained within the packet.

24. The method of claim 22, wherein the indicator is a priority flag contained within a header of the data packet.

25. The method of claim 21, further comprising identifying a third data packet from the plurality of buffered data packets with the same next-hop address as the consolidated packet, checking the size of the third packet, and repeating the adding, comparing, and consolidating steps before transmitting the consolidated packet.

26. A network traffic forwarding system configured to optimize flow of data packets across a data network, the data packets each having a next-hop address, the forwarding system comprising:

a plurality of network interface ports configured to be connected to the network to send and receive data packets;

memory configured for buffering received packets; and

a processor configured, upon receipt of a first data packet by one of the plurality of network interface ports, to identify a second data packet buffered in the memory with the same next-hop address as the first data packet, and to consolidate the first data packet and the second data packet to form a consolidated packet for transmission across the network.

27. The network traffic forwarding system of claim 26, wherein the processor is configured to deconsolidate any received data packets that are consolidated packets.

28. The network traffic forwarding system of claim 27, each data packet having an actual length and including a header with a field giving a total length value for the data packet, wherein the processor is configured to extract the total length value from the header, to compare the total length value to the actual length, and if the actual length is longer than the total length value, to remove a segment from the front of the data packet equal in length to the total length value, and then to buffer the segment.

29. The network traffic forwarding system of claim 28, wherein the processor is configured to repeat the extract, compare and remove steps repeatedly until the actual length is equal to the total length value.

30. The network traffic forwarding system of claim 26, wherein the memory is divided into a plurality of buffers, and wherein the processor is configured to sort received data packets into the plurality of buffers by next-hop address.

31. The network traffic forwarding system of claim 26, wherein the processor is configured to determine whether the next-hop address of the selected data packet is a local address, and if it is a local address, then not to identify a second data packet.

32. The network traffic forwarding system of claim 26, each data packet having an actual length, wherein the processor is configured to compare the actual length of the first data packet to a maximum transmission length, and if the actual length of the first data packet is greater than or equal to the maximum transmission length, to transmit the selected data packet without consolidation.

33. The network traffic forwarding system of claim 26, wherein the processor is configured to check the actual length of the second data packet, to add the actual length of the second data packet to the actual length of the selected data packet to find a total length, to compare the total length to the maximum transmission length, and not to consolidate the selected data packet and second data packet if the total length is equal to or greater than the maximum transmission length.

34. The network traffic forwarding system of claim 26, wherein the processor is configured to check the selected packet for an indicator contained within the packet indicating that the packet is to be consolidated.

35. The network traffic forwarding system of claim 34, wherein the indicator is a priority flag contained within a header of the packet.

36. The network traffic forwarding system of claim 35, wherein the indicator is a tag contained within the data packet that indicates the type of data contained within the packet.

37. An article comprising:

a storage medium having a plurality of machine-readable instructions, wherein when the instructions are executed by a computing system, the instructions provide for the steps of

receiving a plurality of data packets at the network traffic device, each of the plurality of packets having a next hop address;

buffering the data packets;

identifying a first data packet;

identifying a second data packet with the same next-hop address as the first data packet;

consolidating the first data packet with the second data packet to form a consolidated packet; and

transmitting the consolidated data packet.

38. An article comprising:

a storage medium having a plurality of machine-readable instructions, wherein when the instructions are executed by a computing system, the instructions provide for the steps of

receiving a plurality of voice data packets at a network traffic device, the data packets including plural voice data packets and plural non-voice data packets, wherein each of the plural data packets includes a next-hop address and a tag identifying the voice data packet as a voice data packet;

buffering each of the received data packets;

checking a first data packet for the tag;

if the first data packet has the tag, then identifying a second data packet with the tag and with the same next-hop address as the first data packet;

consolidating the first data packet with the second data packet to form a consolidated packet; and

transmitting the consolidated packet.

39. An article comprising:

a storage medium having a plurality of machine-readable instructions, the instructions being configured to be executed by a network traffic device to optimize the transmission of a plurality of data packets across a data network at the network traffic device, the network traffic device having a buffer, each of the plurality of data packets being stored in the buffer and having a next-hop address, wherein execution of the instructions provides for the steps of

selecting a first data packet from the plurality of stored packets;

determining the next-hop address for the first data packet;

checking the size of the first data packet;

comparing the size of the first data packet to a predetermined maximum transmission unit;

if the size of the first data packet is smaller than the maximum transmission unit, then identifying a second data packet from the plurality of stored data packets with the same next-hop address as the selected data packet;

checking the size of first data packet;

adding the size of the first data packet and the second data packet to find a total size;

comparing the total size to the maximum transmission unit;

if the total size is less than or equal to the maximum transmission unit, consolidating the selected data packet and the second data packet to form a consolidated packet; and

transmitting the consolidated packet.